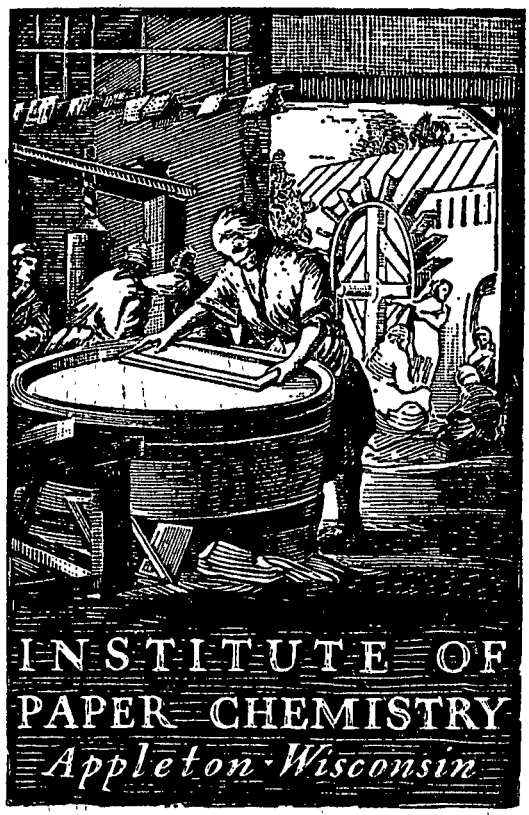

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 107

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1964

6-1-64

CODE LETTERS FOR PROGRESS REPORT 107
PROJECT 1108-17

	Machine	Code Letter
The Chesapeake Corporation - West Point	1	--
Container Corporation of America		
- Circleville	1	G
Continental Can Company, Inc. -Hopewell	1	C
-Hodge	1	Q
Crown Zellerbach Corporation:		
- Baltimore	1	E
- Baltimore	2	H
- Bogalusa	4	N
- Lebanon	1	--
- Lebanon	2	P
International Paper Company:		
- Bastrop	1	A
- Bastrop	2	V
- Georgetown	1	F
The Mead Corporation		
- Harriman	1	I
- Knoxville	1	--
- Lynchburg	2	D
- Sylva	1	--
Olin Mathieson Chemical Corporation:		
- Monroe	1	--
- Monroe	2	--
Owens-Illinois Glass Company-Big Island	3	B
- Tomahawk	1	X
- Tomahawk	2	J
- Tomahawk	3	U
Packaging Corporation of America:		
- Filer City	1	S
- Filer City	2	M
St. Joe Paper Company - Port St. Joe	1	O
St. Regis Container Corporation:		
- Coshocton	1	Y
Union Bag-Camp Paper Corporation:		
- Savannah	2	W
- Monroe	2	R
West Virginia Pulp and Paper Company:		
- Covington	6	K
- Covington	7	--
- Charleston	--	--
- Williamsburg	1	T
- Williamsburg	2	X
Weyerhaeuser Company:		
N. C. Division - Plymouth	3	L

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium have been prepared by The Institute of Paper Chemistry on a bimonthly instead of monthly basis since August 1, 1961. The current report presents results obtained during the months of April and May, 1964, on 185 rolls of corrugating medium representing the production of twenty-six machines. Each of these 185 rolls of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. The evaluation of runnability was initiated by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension and recording the draw factor at this condition if the roll ran satisfactorily. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained, i.e., no ruptured flutes. In this latter case the draw factor was recorded for the highest speed below 600 f.p.m. at which the roll ran satisfactorily. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5 lb. per inch, 1.0 lb. per inch, and 1.5 lb. per inch. Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, will provide data which may be useful in studying the relationship between Concora flat crush and combined board flat crush for each participant's medium.

For each participating machine, the current machine averages associated with the current period are shown for each test in Table I and presented graphically in Fig. 1 to 4. A tabulation of the number of rolls and type of medium evaluated is also given in Table I for each machine. The current machine average is the mean of the test averages obtained on all rolls of corrugating medium evaluated from a given machine during the current period. In addition to the test data obtained for the various machines, Table I also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average for each test is the mean of the current machine averages for all machines participating in the study during a given period (excluding the current machine averages based on the evaluation of fewer than three rolls of corrugating medium as requested by the Technical Committee). The cumulative F.K.I. average for each test is the mean of the current F.K.I. averages for the previous twelve-month period excluding the average for the current period. The F.K.I. index for each test is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

The test results obtained on the rolls submitted from the production of individual machines during the current period are shown in Tables II through XXVII for Machines A through Z, respectively. The maximum, minimum, and average test results obtained on each roll are shown for all tests except basis weight for which only the average is shown; in addition, the over-all average result for all rolls submitted for a given machine is shown for each test. The latter over-all averages are reported as "current machine averages." A cumulative machine average for each

TABLE I

SUMMARY OF CURRENT MACHINE AVERAGES

April and May, 1964

Mill Code	Number of Rolls	Type of Medium	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
A	5	Semichemical	26.9	10.4	38.8	36.1
B	5	Semichemical	26.5	10.3	35.9	33.6
C	8	Semichemical	27.6	11.1	35.2	31.9
D	10	Semichemical	27.4	9.9	34.9	31.4
E	8	Bogus	27.1	9.5	37.5	34.8
F	8	Semichemical	28.4	10.4	42.1	38.2
G	3	Semichemical	27.2	10.2	36.1	35.4
H	8	Bogus	27.0	9.4	38.2	34.9
I	8	Semichemical	27.5	11.0	34.9	32.7
J	8	Semichemical	27.1	10.6	37.0	33.5
K	5	Semichemical	27.0	10.5	34.5	32.7
L	9	Semichemical	26.0	10.0	37.4	33.8
M	7	Semichemical	26.4	10.0	32.6	28.8
N	7	Semichemical	26.9	10.4	36.8	33.7
O	8	Kraft	27.3	9.1	34.3	33.2
P	4	Semichemical	27.4	10.3	33.4	32.1
Q	9	Semichemical	27.5	10.3	36.6	32.7
R	8	Bogus	27.4	9.3	34.4	31.0
S	7	Semichemical	26.6	10.1	33.6	30.5
T	6	Semichemical	26.6	9.2	33.7	31.9
U	8	Semichemical	27.0	10.6	36.0	33.0
V	8	Semichemical	26.4	10.3	39.6	35.6
W	8	Semichemical	26.7	8.9	36.9	33.3
X	8	Semichemical	27.3	10.4	37.7	33.3
Y	10	Bogus	28.2	10.9	39.1	35.7
Z	2	Semichemical	See note[a]			
Total	185					
Current F.K.I. average			27.1	10.1	36.3	33.4
Cumulative F.K.I. average			27.0	10.3	36.0	32.2
F.K.I. index, %			100.5	98.4	100.8	103.7

[a] Current machine averages have been omitted in compliance with the Technical Committee's request that current machine averages based on evaluations of fewer than three rolls of medium should be excluded from the summary table and from the calculation of the current F.K.I. averages.

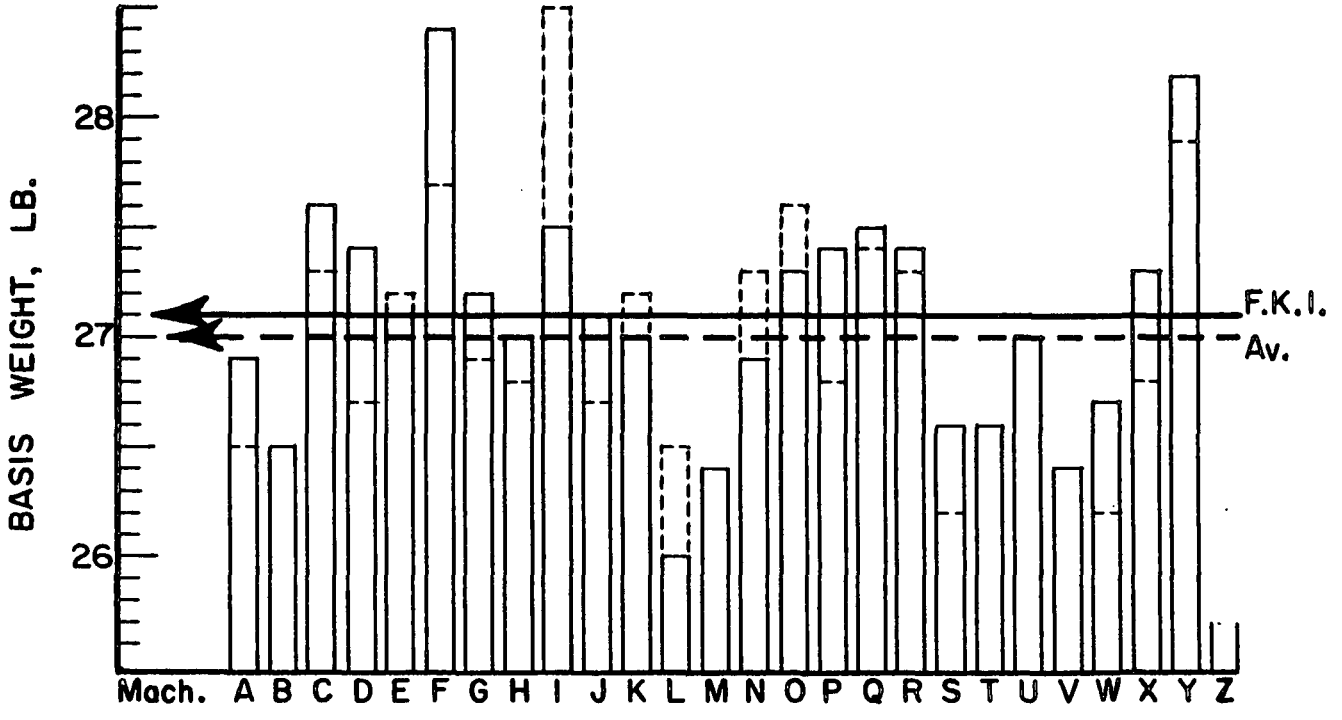

Figure 1. Comparison of Basis Weight Results

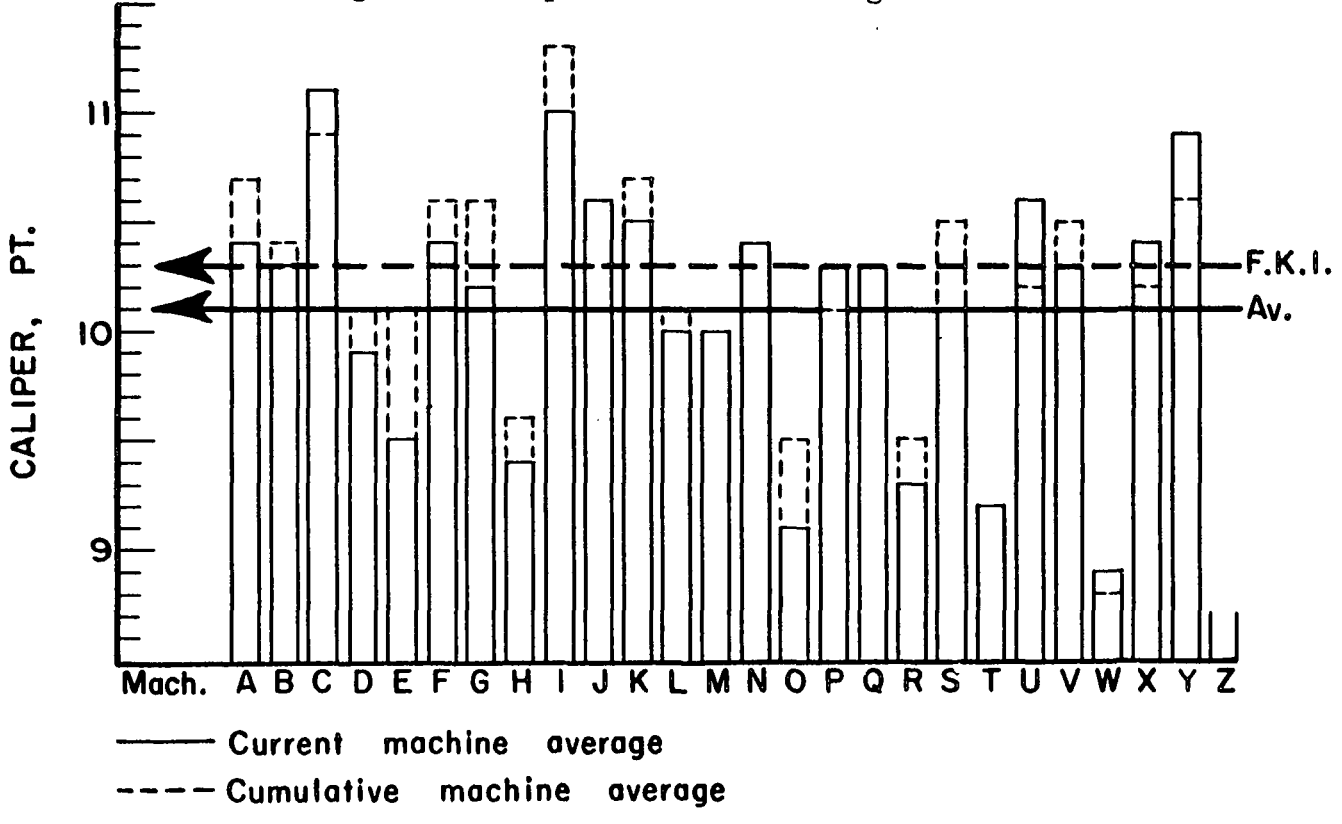

Figure 2. Comparison of Caliper Results

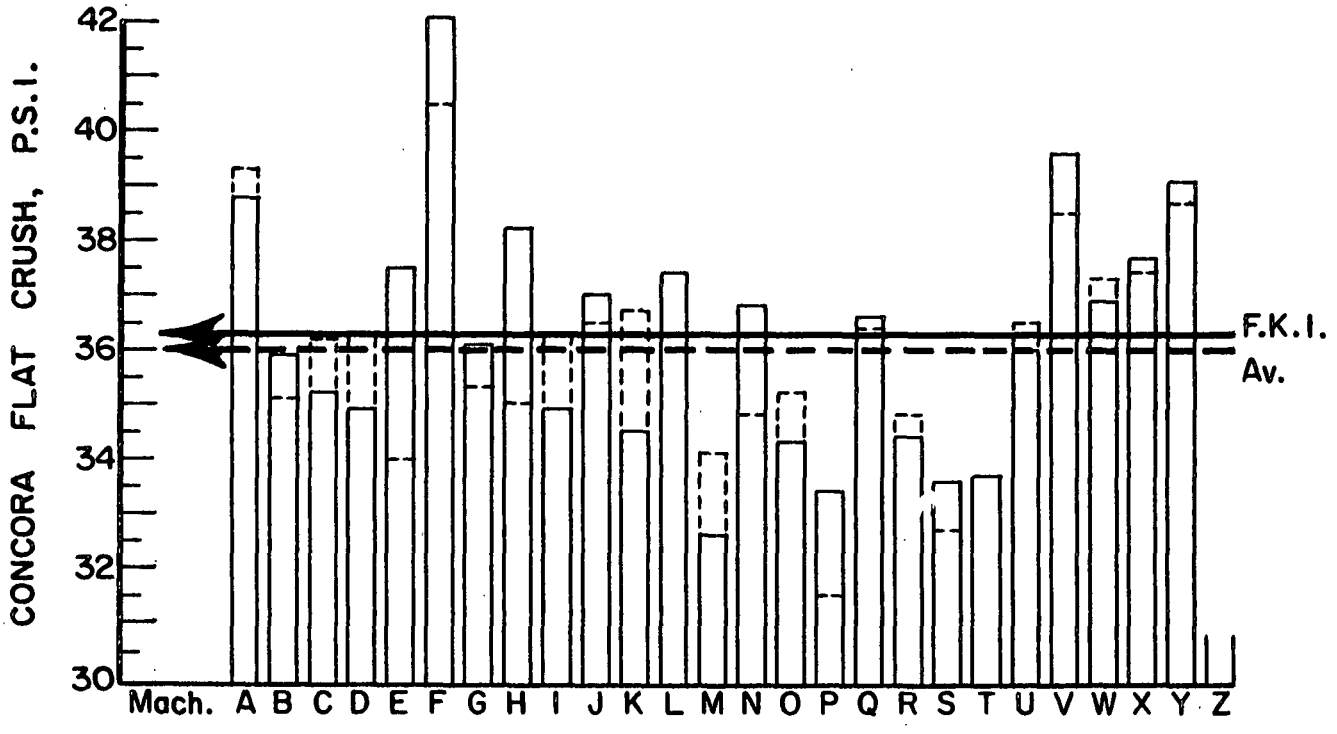

Figure 3. Comparison of Concora Flat Crush Results

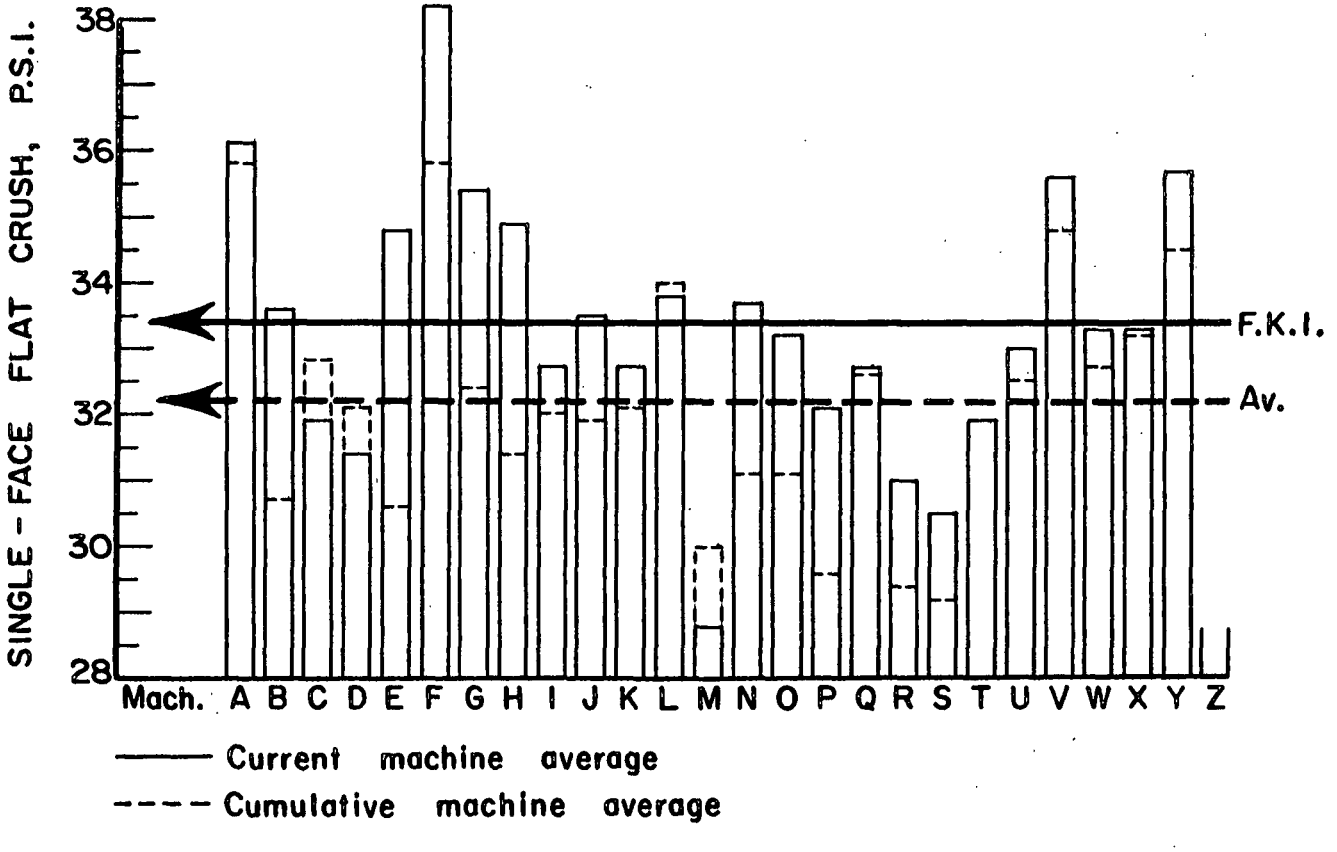

Figure 4. Comparison of Single-Face Flat Crush Results

TABLE II

SUMMARY OF TEST RESULTS FOR MACHINE A

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability,	
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	lb./in.[a]	Draw Factor[b]
A-1	3-24-64	3-31-64	707	26.7	11.5	9.0	10.6	43.8	36.0	39.0	39.0	36.0	37.4	1	1.566
A-2	4-1-64	4-12-64	708	26.0	11.0	10.0	10.7	39.6	34.8	37.0	36.4	33.4	34.2	1	1.565
A-3	4-10-64	4-20-64	709	27.2	11.1	10.2	10.6	39.0	36.0	37.8	37.6	32.0	35.2	1/2	1.554
A-4	4-22-64	4-29-64	710	27.3	11.0	10.0	10.4	42.0	34.8	38.0	37.4	33.8	35.3	1-1/2	1.560
A-5	5-15-64	5-25-64	711	27.2	10.1	9.6	9.9	46.2	39.0	42.1	39.8	37.4	38.6	1-1/2	1.554
Current machine average,				26.9			10.4			38.8			36.1		1.560
Cumulative machine average,				26.5			10.7			39.3			35.8		-
Machine factor, %				101.3			97.8			98.8			101.0		-
Machine index, %				99.8			101.4			107.7			112.3		-

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE B

April and May, 1964
(Type of Medium: Semichemical)

B-1	3-27-64	5-4-64	5656	26.6	10.4	10.0	10.2	36.6	34.2	35.6	33.0	32.4	32.8	1	1.566
B-2	4-6-64	5-4-64	1238	25.9	10.9	9.9	10.3	36.6	30.6	33.7	35.0	33.0	33.6	1-1/2	1.569
B-3	4-12-64	5-4-64	2590	26.3	11.0	10.0	10.3	36.6	33.6	35.3	35.4	33.4	34.0	1	1.561
B-4	4-17-64	5-4-64	3777	26.3	10.7	10.0	10.4	37.8	34.2	36.4	32.8	32.0	32.4	1-1/2	1.560
B-5	4-24-64	5-4-64	5174	27.4	10.9	9.9	10.4	43.8	34.8	38.5	35.8	34.4	35.1	1	1.567
Current machine average,				26.5			10.3			35.9			33.6		1.565
Cumulative machine average,				26.5			10.4			35.1			30.7		-
Machine factor, %				100.0			98.7			102.3			109.4		-
Machine index, %				98.2			100.0			99.7			104.4		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE C

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points Max.	Min.	Av.	Concora Flat Crush, p.s.i. Max.	Min.	Av.	Single-Face Flat Crush, p.s.i. Max.	Min.	Av.	Runnability, lb./in.[a]	Draw Factor[b]
C-1	3-4-64	4-8-64	448	28.1	11.2	11.0	11.1	38.4	36.0	37.6	36.2	32.0	33.9	1-1/2	1.566
C-2	3-12-64	4-8-64	449	27.6	11.7	10.9	11.2	38.4	34.8	36.7	34.2	29.6	32.1	1-1/2	1.567
C-3	3-16-64	4-12-64	450	27.6	11.8	11.0	11.3	38.4	33.0	35.5	33.0	31.2	32.0	1	1.565
C-4	3-25-64	4-12-64	451	27.7	11.2	11.0	11.1	34.8	33.6	34.4	30.4	28.6	29.4	1-1/2	1.567
C-5	4-1-64	4-12-64	452	28.1	11.2	10.6	11.0	38.4	36.0	36.8	36.4	34.0	35.2	1-1/2	1.568
C-6	4-6-64	4-20-64	453	27.5	11.5	11.0	11.2	37.8	30.6	34.0	34.6	28.4	31.5	1/2	1.562
C-7	4-23-64	5-11-64	454	26.5	11.0	10.6	10.8	36.0	30.0	32.8	30.6	27.6	29.0	1/2	1.558
C-8	4-27-64	5-11-64	455	27.6	11.5	10.4	11.0	37.2	28.8	34.0	34.4	30.6	32.3	1	1.558
Current machine average,				27.6			11.1			35.2			31.9		1.564
Cumulative machine average,				27.3			10.9			36.2			32.8		-
Machine factor, %				101.2			101.4			97.2			97.3		-
Machine index, %				102.4			107.7			97.8			99.3		-

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE D

April and May, 1964
(Type of Medium: Semichemical)

D-1	3-26-64	3-30-64	1101	28.9	11.3	10.7	11.0	37.2	33.0	35.3	35.0	30.8	32.4	1	1.568
D-2	3-26-64	3-30-64	1102	27.8	11.0	10.2	10.8	39.0	33.6	36.0	31.4	28.8	30.0	1-1/2	1.570
D-3	4-2-64	4-9-64	1109	27.2	9.9	8.6	9.6	37.8	36.0	36.8	32.8	30.4	31.6	1-1/2	1.571
D-4	4-2-64	4-9-64	1110	27.4	9.9	9.2	9.6	37.8	34.8	36.1	34.0	30.8	32.6	1-1/2	1.573
D-5	4-13-64	4-20-64	1117	27.7	10.1	9.5	9.9	37.2	33.6	35.5	35.8	31.8	34.1	1-1/2	1.567
D-6	4-13-64	4-20-64	1118	27.8	10.0	9.0	9.6	37.8	33.6	36.1	35.6	31.6	33.6	1-1/2	1.567
D-7	5-4-64	5-11-64	1125	27.4	10.2	9.8	10.0	39.0	28.8	34.0	34.0	30.8	32.6	1	1.564
D-8	5-4-64	5-11-64	1126	27.6	10.2	9.3	9.9	35.4	33.6	34.6	32.4	29.4	31.0	1-1/2	1.568
D-9	5-20-64	5-25-64	1133	25.7	9.8	9.0	9.2	34.8	31.8	33.0	30.4	26.6	28.0	1-1/2	1.573
D-10	5-22-64	5-25-64	1134	26.0	9.3	9.0	9.1	34.2	30.6	31.9	29.6	26.6	27.9	1-1/2	1.573
Current machine average,				27.4			9.9			34.9			31.4		1.569
Cumulative machine average,				26.7			10.1			36.3			32.1		-
Machine factor, %				102.3			97.3			96.2			97.7		-
Machine index %				101.5			95.8			97.0			97.6		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE E

April and May, 1964
(Type of Medium: Bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, lb./in.[a]	Draw Factor[b]
E-1	3-3-64	4-2-64	120	27.7	10.0	9.1	9.5	37.8	34.8	36.4	35.2	32.2	33.6	1-1/2	1.572
E-2	3-11-64	4-2-64	121	27.8	10.0	9.0	9.4	40.2	37.2	38.4	36.4	33.4	34.4	1-1/2	1.570
E-3	3-18-64	4-2-64	122	27.3	9.6	8.9	9.1	41.4	34.2	37.7	35.6	33.4	34.9	1-1/2	1.574
E-4	3-21-64	4-2-64	123	27.4	10.0	8.8	9.4	39.0	31.2	35.8	35.2	31.8	33.6	1-1/2	1.572
E-5	4-2-64	5-11-64	124	27.1	10.2	9.8	10.0	39.0	35.4	37.7	38.0	34.2	35.5	1-1/2	1.569
E-6	4-8-64	5-11-64	125	27.0	10.4	9.0	9.6	40.2	35.4	38.0	35.6	33.4	34.7	1-1/2	1.569
E-7	4-21-64	5-11-64	126	26.3	10.0	9.0	9.3	39.6	36.0	38.0	35.8	34.2	35.2	1-1/2	1.570
E-8	4-30-64	5-11-64	127	26.2	10.0	8.9	9.4	40.8	37.2	38.4	38.0	34.4	36.1	1-1/2	1.569
Current machine average,				27.1			9.5			37.5			34.8		1.571
Cumulative machine average,				27.2			10.1			34.0			30.6		-
Machine factor, %				99.7			93.5			110.6			113.6		-
Machine index, %				100.5			92.1			104.3			108.0		-

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE F

April and May, 1964
(Type of Medium: Semichemical)

F-1	1-6-64	3-31-64	558	28.8	10.7	9.9	10.2	43.2	39.0	42.1	37.8	35.8	37.1	1-1/2	1.566
F-2	1-10-64	3-31-64	559	27.2	11.2	9.9	10.6	40.2	36.0	38.5	36.2	33.8	35.3	1-1/2	1.566
F-3	2-8-64	5-11-64	560	28.8	10.8	10.1	10.3	41.4	40.8	41.2	40.6	37.6	39.1	1/2	1.558
F-4	2-19-64	5-11-64	561	28.4	10.8	10.0	10.5	43.8	40.2	42.5	42.0	37.0	39.6	1/2	1.562
F-5	3-8-64	5-11-64	562	28.7	10.5	10.0	10.2	43.2	39.0	41.8	41.6	36.6	38.7	1/2	1.564
F-6	3-9-64	5-11-64	563	28.7	10.8	10.0	10.4	45.6	39.0	43.0	40.0	36.6	38.7	1	1.561
F-7	3-10-64	5-11-64	564	28.6	11.0	10.2	10.6	45.0	39.6	43.0	40.4	35.4	38.2	1	1.559
F-8	3-22-64	5-11-64	565	28.3	11.0	10.2	10.5	49.2	40.2	44.5	43.2	36.8	39.3	1	1.563
Current machine average,				28.4			10.4			42.1			38.2		1.562
Cumulative machine average,				27.7			10.6			40.5			35.8		-
Machine factor, %				102.8			98.7			103.9			106.8		-
Machine index, %				105.5			101.2			116.8			118.9		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE G

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
G-1	3-10-64	4-14-64	46	26.8	10.4	9.7	10.1	39.0	30.0	34.8	35.0	32.4	34.1	1-1/2	1.559
G-2	3-19-64	4-14-64	47	27.6	10.7	9.8	10.3	38.4	35.4	37.1	36.8	35.0	35.7	1	1.564
G-3	3-19-64	4-14-64	48	27.1	10.7	9.9	10.2	39.6	33.6	36.5	37.4	35.6	36.5	1	1.562
Current machine average,				27.2			10.2			36.1			35.4		1.562
Cumulative machine average,				26.9			10.6			35.3			32.4		-
Machine factor, %				101.1			96.1			102.2			109.3		-
Machine index, %				100.8			99.1			100.3			110.1		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE H

April and May, 1964
(Type of Medium: Bogus)

H-1	3-3-64	4-2-64	220	27.4	10.2	9.0	9.8	38.4	33.0	36.5	33.4	32.4	33.0	1-1/2	1.569
H-2	3-5-64	4-2-64	221	27.1	9.9	9.1	9.6	40.8	37.8	39.1	35.6	33.4	34.4	1-1/2	1.571
H-3	3-18-64	4-2-64	222	27.1	9.3	7.7	8.5	40.2	34.8	37.1	36.4	33.0	35.2	1-1/2	1.566
H-4	3-24-64	4-2-64	223	26.5	10.0	8.7	9.5	43.8	37.2	40.6	37.8	33.4	35.0	1-1/2	1.566
H-5	4-1-64	5-11-64	224	27.0	10.1	9.1	9.6	40.8	35.4	38.3	39.0	34.4	36.4	1-1/2	1.550
H-6	4-8-64	5-11-64	225	26.9	9.9	8.9	9.4	39.0	36.0	37.1	37.6	34.8	36.0	1-1/2	1.555
H-7	4-28-64	5-11-64	226	26.9	10.0	8.9	9.3	40.8	37.2	39.5	36.2	33.6	35.0	1	1.549
H-8	4-28-64	5-11-64	227	27.3	10.0	8.9	9.3	40.8	33.0	37.6	36.8	31.4	34.2	1-1/2	1.552
Current machine average,				27.0			9.4			38.2			34.9		1.560
Cumulative machine average,				26.8			9.6			35.0			31.4		-
Machine factor, %				100.7			97.3			109.2			111.2		-
Machine index, %				100.0			91.1			106.1			108.4		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE I

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
I-1	4-8-64	4-15-64	1114	27.5	11.0	10.5	10.9	36.6	33.0	35.0	33.4	32.4	32.9	1/2	1.558
I-2	4-8-64	4-15-64	1115	27.3	11.1	10.7	10.9	33.6	31.2	32.5	30.8	29.6	30.4	1	1.564
I-3	4-13-64	4-21-64	1122	29.7	12.3	11.9	12.1	37.2	34.2	36.5	36.4	32.8	34.2	1/2	1.550
I-4	4-13-64	4-21-64	1123	28.9	12.3	11.9	12.1	39.0	33.6	35.5	35.2	30.8	33.3	Min.	1.551
I-5	4-27-64	5-5-64	1130	26.0	11.0	10.2	10.8	37.2	30.0	33.5	34.0	30.8	32.6	1/2	1.556
I-6	4-27-64	5-5-64	1131	26.2	11.0	10.6	10.8	34.8	31.8	33.6	34.2	30.2	31.9	1/2	1.556
I-7	5-6-64	5-15-64	1138	27.1	10.8	10.0	10.4	37.2	31.2	35.3	33.8	31.6	32.8	1-1/2	1.555
I-8	5-6-64	5-15-64	1139	27.1	10.8	9.0	10.2	37.8	36.0	37.0	34.6	32.8	33.6	1-1/2	1.560
Current machine average,				27.5			11.0			34.9			32.7		1.556
Cumulative machine average,				28.5			11.3			36.3			32.0		-
Machine factor, %				96.2			97.6			96.1			102.1		-
Machine index, %				101.9			107.0			96.8			101.7		-

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE J

April and May, 1964
(Type of Medium: Semichemical)

J-1	4-8-64	4-22-64	-	27.2	10.8	10.0	10.4	36.0	30.6	33.8	32.8	31.0	31.8	1/2	1.557
J-2	4-10-64	4-22-64	-	27.3	10.2	9.9	10.1	39.6	36.0	37.6	35.2	33.4	34.4	1/2	1.557
J-3	4-13-64	4-22-64	-	27.0	10.9	10.1	10.6	38.4	35.4	36.5	34.6	32.0	33.3	1/2	1.559
J-4	4-14-64	4-22-64	-	28.0	10.9	10.4	10.8	39.6	35.4	37.8	35.6	34.2	34.9	1/2	1.560
J-5	5-11-64	5-19-64	-	26.3	10.8	10.2	10.6	37.8	36.0	37.2	34.2	31.4	32.7	1/2	1.563
J-6	5-12-64	5-19-64	-	27.0	10.9	10.6	10.8	40.2	36.6	38.2	34.2	31.8	32.8	1/2	1.569
J-7	5-14-64	5-19-64	-	26.8	11.0	10.4	10.8	40.2	34.2	37.8	35.6	33.6	34.6	1	1.569
J-8	5-15-64	5-21-64	-	27.4	11.0	10.7	10.9	38.4	34.8	36.8	35.4	32.0	33.8	1/2	1.559
Current machine average,				27.1			10.6			37.0			33.5		1.562
Cumulative machine average,				26.7			10.6			36.5			31.9		-
Machine factor, %				101.6			100.0			101.4			105.2		-
Machine index, %				100.6			103.0			102.7			104.3		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE K

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Runnability, Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
K-1	3-14-64	4-16-64	264	26.9	10.8	10.2	10.6	35.4	28.8	33.2	34.0	30.8	32.8	1/2	1.561
K-2	3-22-64	4-16-64	265	27.3	10.8	10.0	10.3	34.8	33.0	33.8	35.6	33.4	34.6	1/2	1.559
K-3	3-28-64	4-16-64	266	26.9	11.2	10.1	10.7	36.0	33.0	34.6	33.2	31.0	32.0	1	1.566
K-4	4-11-64	4-16-64	267	27.4	11.0	10.4	10.7	40.2	36.0	37.9	35.6	32.4	34.1	1-1/2	1.570
K-5	4-30-64	5-14-64	268	26.2	10.8	9.9	10.2	34.8	31.8	33.1	30.6	29.6	30.0	1	1.568
Current machine average,				27.0			10.5			34.5			32.7		1.565
Cumulative machine average,				27.2			10.7			36.7			32.1		-
Machine factor, %				98.9			98.6			94.1			101.9		-
Machine index, %				100.0			102.0			95.9			101.7		-

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE L

April and May, 1964
(Type of Medium: Semichemical)

L-1	3-18-64	4-12-64	493	25.5	10.0	9.6	9.8	43.8	37.8	40.9	38.6	34.8	36.0	1	1.572
L-2	3-25-64	4-12-64	721A	26.3	11.3	10.4	10.9	38.4	34.2	36.1	32.6	31.4	31.9	Min.	1.556
L-3	3-25-64	4-12-64	721B	25.7	11.0	10.2	10.8	40.2	31.8	35.3	34.6	28.6	32.0	Min.[a]	1.555
L-4	4-2-64	4-14-64	37	25.9	9.8	8.8	9.2	35.4	33.0	34.1	31.2	29.6	30.3	Note	1.543
L-5	4-6-64	4-14-64	158	25.2	9.8	9.1	9.5	39.6	31.8	34.7	33.0	30.4	31.6	1/2	1.564
L-6	4-14-64	5-4-64	403	25.5	10.3	9.3	9.8	37.8	33.6	36.5	35.8	31.4	34.0	Min.	1.561
L-7	4-20-64	5-4-64	589	26.3	10.2	9.8	10.0	39.6	36.6	38.5	36.8	32.8	34.6	Min.	1.560
L-8	4-27-64	5-11-64	789	27.2	10.0	9.5	9.8	44.4	40.2	42.8	39.6	37.0	38.8	Min.	1.556
L-9	5-4-64	5-25-64	89	26.1	10.2	9.2	9.7	40.2	34.8	37.4	35.6	33.6	34.8	Min.	1.556
Current machine average,				26.0			10.0			37.4			33.8		1.558
Cumulative machine average,				26.5			10.1			37.4			34.0		-
Machine factor, %				98.1			98.8			100.0			99.4		-
Machine index, %				96.4			96.8			103.8			105.0		-

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.
[c] Maximum speed at which this roll could be corrugated with minimum tension was 450 f.p.m.

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE M

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability,	
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	lb./in.[a]	Draw Factor[b]
M-1	3-23-64	4- 1-64	108	26.6	11.1	10.1	10.6	33.6	30.6	32.5	30.8	27.6	29.8	1-1/2	1.570
M-2	4- 6-64	4-10-64	109	26.3	10.8	10.1	10.2	34.2	29.4	31.4	29.8	27.6	28.9	1-1/2	1.579
M-3	5-19-64	5-25-64	110	27.4	9.3	8.4	9.0	30.0	18.0	25.9	24.4	21.8	23.1	1-1/2	1.575
M-4	4-20-64	4-24-64	111	26.7	10.8	9.8	10.3	36.0	33.0	34.1	31.6	29.0	30.7	1-1/2	1.575
M-5	4-28-64	5- 4-64	112	26.2	10.9	9.9	10.3	39.0	33.0	36.5	33.8	29.0	31.2	1-1/2	1.575
M-6	5- 2-64	5- 7-64	113	25.8	10.4	9.5	10.0	35.4	31.8	33.2	28.6	27.2	27.7	1/2	1.572
M-7	5-15-64	5-20-64	114	26.0	10.1	9.0	9.5	36.0	33.0	34.2	31.8	29.0	30.6	1-1/2	1.575
Current machine average,				26.4			10.0			32.6			28.8		1.574
Cumulative machine average,				26.4			10.0			34.1			30.0		--
Machine factor, %				100.0			100.0			95.4			96.2		--
Machine index, %				98.1			97.0			90.4			89.7		--

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE N

April and May, 1964
(Type of Medium: Semichemical)

N-1	4- 3-64	4-15-64	10	25.8	10.2	9.1	9.8	37.2	33.6	36.1	35.6	34.2	35.1	Min.	1.555
N-2	4- 9-64	4-15-64	11	28.2	10.8	10.0	10.3	37.8	32.4	34.9	35.4	33.4	34.5	Min.	1.555
N-3	4-15-64	5- 4-64	12	27.4	12.1	10.1	10.9	38.4	34.2	36.5	33.2	30.4	32.1	1	1.571
N-4	4-20-64	5- 4-64	13	26.3	10.8	9.0	10.2	39.6	36.6	38.3	35.0	31.4	32.8	1/2	1.569
N-5	4-28-64	5- 4-64	14	26.4	12.5	10.0	10.9	36.6	32.4	34.6	33.4	32.0	32.6	1/2	1.569
N-6	5-13-64	5-25-64	15	26.6	11.2	10.0	10.5	42.6	38.4	40.2	38.0	34.6	36.4	1-1/2	1.564
N-7	5-17-64	5-25-64	16	27.7	10.7	9.8	10.2	39.0	34.8	37.1	33.6	30.8	32.6	Note[c]	1.546
Current machine average,				26.9			10.4			36.8			33.7		1.561
Cumulative machine average,				27.3			10.4			34.8			31.1		--
Machine factor, %				98.6			100.0			105.6			108.4		--
Machine index, %				99.8			101.2			102.2			104.8		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.
[c] Maximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE O

April and May, 1964
(Type of Medium: Kraft)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
O-1	4-14-64	4-29-64	7	26.4	9.2	8.4	8.9	33.6	28.8	31.9	31.4	28.6	30.0	Min.	1.559
O-2	4-14-64	4-29-64	8	26.5	9.0	8.4	8.8	33.6	30.0	32.5	31.8	31.2	31.6	Min.	1.558
O-3	4-14-64	4-29-64	9	26.5	9.3	8.7	9.0	36.0	33.6	34.4	35.6	32.4	33.7	Min.	1.570
O-4	4-14-64	4-29-64	10	26.5	9.1	8.8	9.0	37.2	34.8	35.6	34.4	32.6	33.5	Min.	1.565
O-5	4-21-64	5-12-64	11	27.4	9.5	8.8	9.1	36.0	30.0	34.3	35.4	32.6	34.2	Min.	1.554
O-6	4-21-64	5-12-64	12	27.8	9.8	9.0	9.3	36.6	32.4	34.4	35.0	32.6	33.3	Min.	1.565
O-7	4-21-64	5-12-64	13	28.6	9.8	9.0	9.2	36.6	33.6	35.2	35.2	32.8	34.2	1/2	1.565
O-8	4-21-64	5-12-64	14	28.9	9.8	9.0	9.5	37.8	33.6	35.8	36.6	34.0	35.2	1	1.570
Current machine average,				27.3			9.1			34.3			33.2		1.563
Cumulative machine average,				27.6			9.5			35.2			31.1		--
Machine factor, %				98.9			95.7			97.5			106.9		--
Machine index, %				101.4			88.4			95.2			103.2		--

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE P

April and May, 1964
(Type of Medium: Semichemical)

P-1	3-27-64	4-23-64	C-5	27.4	10.8	10.0	10.4	35.4	30.0	33.5	32.8	29.0	31.2	Min.	1.558
P-2	3-29-64	4-23-64	C-6	27.6	11.1	10.0	10.4	32.4	30.0	31.4	32.2	28.4	31.0	Note[c]	1.545
P-3	3-29-64	4-23-64	C-7	27.1	11.0	10.0	10.4	36.6	32.4	34.6	33.0	32.0	32.4	Min.	1.567
P-4	4- 3-64	4-23-64	D-8	27.4	10.1	9.5	9.9	34.8	31.8	34.0	34.6	31.6	33.8	1-1/2	1.576
Current machine average,				27.4			10.3			33.4			32.1		1.562
Cumulative machine average,				26.8			10.1			31.5			29.6		--
Machine factor, %				102.1			101.5			106.0			108.4		--
Machine index, %				101.5			100.0			92.7			100.0		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.
[c] Maximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE Q

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, lb./in.[a]	Runnability, Draw Factor[b]
Q-1	2-22-64	3-27-64	95	27.4	10.6	10.2	10.3	39.0	35.4	36.7	32.4	31.2	31.7	1-1/2	1.570
Q-2	2-23-64	3-27-64	96	27.7	10.5	10.0	10.3	37.8	34.8	36.2	33.6	31.6	32.6	1-1/2	1.572
Q-3	2-24-64	3-27-64	97	28.1	10.8	10.0	10.5	34.8	33.0	34.1	30.4	28.6	29.8	1-1/2	1.574
Q-4	2-25-64	3-27-64	98	27.7	10.7	9.9	10.2	36.0	33.6	35.3	31.0	29.0	30.2	1-1/2	1.571
Q-5	4-18-64	4-29-64	99	27.5	10.8	10.2	10.4	40.2	35.4	38.4	34.2	32.0	33.4	Min.	1.564
Q-6	4-19-64	4-29-64	100	27.4	10.4	10.0	10.2	39.6	36.6	37.7	35.6	32.4	33.8	1	1.570
Q-7	4-20-64	4-29-64	101	27.7	10.3	10.0	10.2	39.6	36.6	37.7	35.0	32.4	33.9	1	1.569
Q-8	4-21-64	4-29-64	102	27.4	10.6	10.0	10.3	39.0	36.6	37.7	35.6	33.4	34.7	1	1.567
Q-9	4-22-64	4-29-64	103	26.9	10.8	10.2	10.4	37.8	34.2	35.9	35.4	32.6	33.8	1	1.568
Current machine average,				27.5			10.3			36.6			32.7		1.569
Cumulative machine average,				27.4			10.3			36.4			32.6		--
Machine factor, %				100.5			100.0			100.7			100.1		--
Machine index, %				102.1			100.0			101.7			101.5		--

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE R

April and May, 1964
(Type of Medium: Bogus)

R-1	3- 6-64	4- 3-64	9	27.1	9.8	9.2	9.5	35.4	32.4	33.7	30.6	27.6	29.5	1-1/2	1.570
R-2	3-19-64	4- 3-64	10	27.7	9.0	8.4	8.9	34.2	31.2	32.6	33.4	32.8	33.1	1-1/2	1.568
R-3	3-21-64	4- 3-64	11	26.8	9.8	8.3	8.9	37.8	34.8	37.0	33.6	29.6	31.7	1-1/2	1.570
R-4	3-26-64	4- 3-64	12	27.3	9.9	8.8	9.4	31.8	29.4	30.5	28.6	26.2	27.2	1-1/2	1.572
R-5	4- 3-64	5- 6-64	13	28.1	10.0	9.3	9.7	33.6	29.4	31.8	30.4	27.2	28.8	1-1/2	1.569
R-6	4-14-64	5- 6-64	14	28.1	9.4	8.9	9.1	40.2	36.0	37.9	36.0	29.8	33.1	1-1/2	1.575
R-7	4-21-64	5- 6-64	15	28.2	10.3	9.0	9.7	40.2	33.0	36.2	33.8	30.8	32.4	1-1/2	1.571
R-8	4-28-64	5- 6-64	16	26.0	9.8	9.0	9.5	37.8	33.0	35.5	33.6	30.8	32.0	1-1/2	1.572
Current machine average,				27.4			9.3			34.4			31.0		1.571
Cumulative machine average,				27.3			9.5			34.8			29.4		--
Machine factor, %				100.4			98.8			99.0			105.4		--
Machine index, %				101.7			90.7			95.6			96.3		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE S

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability,	
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	lb./in.[a]	Draw Factor[b]
S-1	3-23-64	4- 1-64	108	26.5	10.7	10.1	10.2	35.4	30.0	32.8	32.2	29.0	30.4	1-1/2	1.572
S-2	4- 6-64	4-10-64	109	26.9	10.5	8.9	10.0	36.6	33.6	35.0	30.4	28.4	29.8	1-1/2	1.580
S-3	4-14-64	4-21-64	110	26.2	10.3	9.9	10.1	34.8	31.8	33.5	32.8	30.0	31.4	1-1/2	1.572
S-4	4-20-64	4-23-64	111	26.8	10.9	10.0	10.3	37.8	35.4	36.6	32.0	30.2	31.1	1-1/2	1.577
S-5	4-28-64	5- 4-64	112	26.5	11.6	10.0	10.2	37.2	32.4	34.6	30.8	27.6	30.0	1-1/2	1.575
S-6	5- 3-64	5- 7-64	113	26.2	10.0	9.8	10.0	32.4	29.4	31.7	32.4	30.0	31.2	1-1/2	1.572
S-7	5-15-64	5-20-64	114	27.1	10.2	9.9	10.0	32.4	28.8	31.3	30.6	27.6	29.3	1-1/2	1.575
Current machine average,				26.6			10.1			33.6			30.5		1.575
Cumulative machine average,				26.2			10.5			32.7			29.2		--
Machine factor, %				101.3			95.9			102.8			104.4		--
Machine index, %				98.6			98.3			93.4			94.7		--

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE T

April and May, 1964

(Type of Medium: Semichemical)

T-1	3-20-64	4- 8-64	1	26.6	9.3	9.1	9.2	31.8	29.4	30.6	30.8	27.4	29.2	1-1/2	1.571
T-2	3-20-64	4- 8-64	2	26.5	9.2	9.0	9.0	34.2	32.4	33.0	32.6	30.2	31.3	1-1/2	1.574
T-3	3-21-64	4- 8-64	3	26.5	9.6	9.2	9.3	34.2	32.4	33.2	32.0	30.8	31.3	1-1/2	1.575
T-4	3-18-64	4- 8-64	4	26.8	9.3	9.0	9.2	36.6	34.8	35.6	34.8	32.6	33.4	1-1/2	1.574
T-5	4- 1-64	5-12-64	5	26.3	9.7	9.0	9.4	36.0	33.0	34.6	33.4	32.6	33.0	1-1/2	1.566
T-6	4-12-64	5-12-64	6	26.9	9.5	9.0	9.2	36.0	34.2	35.3	34.2	32.2	33.2	1-1/2	1.570
Current machine average,				26.6			9.2			33.7			31.9		1.572
Cumulative machine average,				--			--			--			--		--
Machine factor, %				--			--			--			--		--
Machine index, %				98.7			89.6			93.7			99.2		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE U

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, lb./in.[a]	Runnability, Draw Factor[b]
U-1	4-10-64	4-22-64	--	26.5	10.5	9.9	10.1	37.2	33.0	35.4	35.6	33.6	34.6	1/2	1.561
U-2	4-12-64	4-22-64	--	27.4	11.1	10.4	10.8	36.0	34.2	34.9	32.8	31.6	32.4	1/2	1.558
U-3	4-14-64	4-22-64	--	26.7	11.0	10.7	10.9	36.6	33.0	35.2	32.4	31.0	31.6	Min.	1.557
U-4	4-18-64	4-22-64	--	26.9	10.9	10.1	10.4	39.6	34.2	37.0	36.0	33.2	35.0	1/2	1.563
U-5	5-11-64	5-19-64	--	27.2	10.9	10.2	10.7	36.6	35.4	36.1	33.4	30.8	31.9	1/2	1.560
U-6	5-12-64	5-19-64	--	27.1	10.5	10.1	10.2	39.0	36.0	37.6	36.2	33.6	34.6	1/2	1.558
U-7	5-13-64	5-19-64	--	26.6	11.0	10.3	10.7	35.4	33.6	34.3	32.0	30.0	30.9	1	1.563
U-8	5-16-64	5-21-64	--	27.6	11.2	10.8	11.0	37.8	36.6	37.4	34.0	32.0	32.8	1/2	1.558
Current machine average,				27.0			10.6			36.0			33.0		1.560
Cumulative machine average,				27.0			10.2			36.5			32.5		--
Machine factor, %				100.0			103.7			98.5			101.5		--
Machine index, %				100.0			103.0			100.0			102.6		--

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE V

April and May, 1964
(Type of Medium: Semichemical)

V-1	3-20-64	3-31-64	376	25.9	10.8	10.0	10.2	42.0	37.8	40.0	38.0	33.6	35.4	1-1/2	1.566
V-2	3-24-64	3-31-64	377	26.3	11.0	9.0	10.2	40.2	36.0	38.4	37.4	33.0	35.6	1-1/2	1.566
V-3	4- 3-64	4-12-64	378	25.7	10.2	9.0	9.9	41.4	37.2	40.0	37.0	32.6	35.4	1-1/2	1.565
V-4	4-10-64	4-20-64	379	26.6	11.1	10.0	10.4	44.4	40.8	42.2	38.4	32.6	36.5	1	1.562
V-5	4-23-64	4-29-64	380	27.5	11.0	10.2	10.7	42.0	36.6	40.6	37.2	32.4	35.4	1-1/2	1.568
V-6	4-30-64	5- 8-64	381	26.3	10.8	9.6	10.2	40.8	34.8	38.3	39.0	34.8	36.8	1/2	1.558
V-7	5- 6-64	5-12-64	382	26.4	11.2	10.1	10.7	40.2	33.6	37.1	34.6	31.6	33.2	1-1/2	1.565
V-8	5-15-64	5-25-64	383	26.6	10.7	9.9	10.2	42.6	38.4	40.1	37.4	35.0	36.1	1-1/2	1.564
Current machine average,				26.4			10.3			39.6			35.6		1.564
Cumulative machine average,				26.4			10.5			38.5			34.8		--
Machine factor, %				100.0			98.4			102.8			102.2		--
Machine index, %				98.0			100.0			109.9			110.5		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE W

April and May, 1964
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Runnability, Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
W-1	3-23-64	4- 1-64	584	26.4	9.0	8.8	8.9	37.2	32.4	35.3	31.6	30.4	30.9	1-1/2	1.570
W-2	4- 8-64	4-14-64	585	26.7	9.1	8.8	8.9	42.0	36.6	39.1	34.8	33.0	34.2	Min.	1.558
W-3	4- 9-64	4-17-64	586	27.1	9.2	8.9	9.0	37.8	31.8	35.2	35.8	33.6	34.6	1	1.570
W-4	4-14-64	4-21-64	587	27.5	9.4	8.9	9.1	39.0	36.6	37.7	38.2	34.2	36.0	1-1/2	1.572
W-5	4-19-64	4-27-64	588	26.4	8.8	8.2	8.5	36.0	31.8	34.3	32.4	30.4	32.1	Min.	1.547
W-6	4-28-64	5- 6-64	589	26.7	9.0	8.8	8.9	39.0	33.6	36.7	34.6	30.8	32.1	Min.	1.548
W-7	5-15-64	5-25-64	590	26.9	9.7	8.8	9.1	42.0	34.8	38.4	35.4	32.6	33.4	1/2	1.563
W-8	5-18-64	5-25-64	591	26.3	9.0	8.2	8.6	40.8	36.6	38.8	34.4	31.6	33.1	1-1/2	1.573
Current machine average,				26.7			8.9			36.9			33.3		1.563
Cumulative machine average,				26.2			8.8			37.3			32.7		--
Machine factor, %				102.1			100.4			98.9			102.0		--
Machine index, %				99.2			86.3			102.6			103.5		--

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE X

April and May, 1964
(Type of Medium: Semichemical)

X-1	4- 7-64	4-22-64	--	26.9	10.3	10.0	10.2	37.8	34.2	35.9	34.4	32.4	33.4	1	1.565
X-2	4- 8-64	4-22-64	--	26.8	10.5	10.0	10.2	38.4	34.8	36.7	33.4	31.4	32.0	1	1.565
X-3	4-10-64	4-22-64	--	27.8	10.6	10.0	10.3	40.2	38.4	39.2	36.2	32.4	34.2	1	1.565
X-4	4-14-64	4-22-64	--	28.3	11.2	10.4	10.9	39.6	34.8	37.0	33.4	31.4	32.3	Min.	1.557
X-5	5-12-64	5-19-64	--	27.4	10.8	10.4	10.7	40.2	36.6	38.5	33.8	32.0	33.3	1-1/2	1.565
X-6	5-13-64	5-19-64	--	26.8	10.4	10.0	10.1	40.2	37.8	39.0	35.0	33.4	34.3	1-1/2	1.568
X-7	5-15-64	5-21-64	--	27.4	10.8	10.2	10.6	38.4	36.0	37.3	33.4	31.4	32.3	1	1.565
X-8	5-16-64	5-21-64	--	27.1	10.5	10.0	10.3	38.4	36.0	37.8	35.2	34.2	34.6	1-1/2	1.565
Current machine average,				27.3			10.4			37.7			33.3		1.564
Cumulative machine average,				26.8			10.2			37.4			33.2		--
Machine factor, %				102.0			102.1			100.8			100.4		--
Machine index, %				101.3			101.0			104.7			103.6		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

TABLE XXVI

SUMMARY OF TEST RESULTS FOR MACHINE Y

April and May, 1964
(Type of Medium: Bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M. sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in.[a]	Runnability, Draw Factor[b]
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
Y-1	3- 6-64	4- 6-64	442	28.4	11.4	10.0	10.9	44.4	39.0	42.6	39.0	36.0	37.4	1-1/2	1.569
Y-2	3-12-64	4- 6-64	443	28.5	11.9	10.2	11.0	43.8	39.6	41.5	40.6	38.0	39.2	1-1/2	1.568
Y-3	3-17-64	4- 6-64	444	28.8	11.9	10.8	11.1	39.6	36.0	38.0	39.0	36.0	37.2	1-1/2	1.569
Y-4	3-20-64	4- 6-64	445	28.7	11.7	10.2	10.9	42.0	37.2	39.7	35.4	32.8	34.0	1-1/2	1.571
Y-5	4- 2-64	4-24-64	446	28.4	11.2	10.0	10.8	40.8	36.6	38.8	37.2	34.0	36.0	Min.	1.543
Y-6	4- 4-64	4-24-64	447	27.8	11.6	10.3	10.8	38.4	37.2	37.9	36.4	34.6	35.5	Min.	1.549
Y-7	4-10-64	4-24-64	448	28.0	11.6	10.4	10.9	40.2	34.2	37.8	37.6	34.6	35.8	1/2	1.557
Y-8	4-17-64	4-24-64	449	27.9	11.3	10.7	11.0	40.8	37.8	39.2	37.2	34.6	35.9	1/2	1.559
Y-9	5-12-64	5-21-64	450	27.9	11.3	10.7	11.0	42.6	36.6	39.5	37.6	31.6	34.3	1-1/2	1.565
Y-10	5-13-64	5-21-64	451	27.4	11.7	10.1	11.0	39.0	33.0	35.8	33.0	29.6	31.2	1-1/2	1.565
Current machine average,				28.2			10.9			39.1			35.7		1.562
Cumulative machine average,				27.9			10.6			38.7			34.5		--
Machine factor, %				100.9			103.0			100.9			103.5		--
Machine index, %				104.5			106.3			108.6			110.8		--

TABLE XXVII

SUMMARY OF TEST RESULTS FOR MACHINE Z

April and May, 1964
(Type of Medium: Semichemical)

Z-1	4-22-64	5-12-64	7	26.1	9.9	9.4	9.7	33.0	31.8	32.4	33.2	30.6	31.7	1-1/2	1.566
Z-2	4-27-64	5-12-64	8	25.8	9.2	9.0	9.0	33.6	30.0	32.4	32.6	31.6	32.0	1-1/2	1.571
Current machine average,				26.0			9.4			32.4			31.8		1.568
Cumulative machine average,				--			--			--			--		--
Machine factor, %				--			--			--			--		--
Machine index, %				96.3			91.0			90.0			99.0		--

[a] Maximum tension at 600 f.p.m.
[b] 600 f.p.m., minimum tension.

test is also shown representing the mean of the current machine averages for the previous twelve periods (excluding the current period). Also shown for each machine in Tables II to XXVII are the machine factor and machine index which are defined as follows:

$$\frac{\text{current machine average}}{\text{cumulative machine average}} \times 100 = \text{machine factor (\%)}$$

$$\frac{\text{current machine average}}{\text{cumulative F.K.I. average}} \times 100 = \text{machine index (\%)}$$

The machine factor and machine index provide a means for comparing the current machine average with either the previous results for that particular machine or with the cumulative results for all machines, i.e., the cumulative F.K.I. average.

DISCUSSION OF RESULTS

Shown below from Table I are the maximum and minimum current machine averages noted for each test during the current period (April and May, 1964); the current machine average represents the mean of the averages for a given test obtained on all rolls submitted from a given machine during the current period. Also shown for each test is the current F.K.I. average which represents the mean of the current machine averages for the current period and is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines:

	Maximum Current Machine Average	Minimum Current Machine Average	Current F.K.I. Average
Basis wt., lb.	28.4	26.0	27.1
Caliper, pt.	11.1	8.9	10.1
Concora flat crush, p.s.i.	42.1	32.6	36.3
Single-face flat crush, p.s.i.	38.2	28.8	33.4

The runnability data for the 185 rolls evaluated during the current period are summarized as follows:

Runnability	Number of Rolls	Percentage of Total Rolls
Less than 600 f.p.m. with minimum tension	3	1.6
600 f.p.m. – minimum tension	25	13.5
600 f.p.m. – 1/2 lb. per in. tension	34	18.4
600 f.p.m. – 1 lb. per in. tension	33	17.8
600 f.p.m. – 1-1/2 lb. per in. tension	90	48.6

Supplementary to the runnability data described above, draw factors were determined for each roll of medium at 600 f.p.m. and minimum tension and are given in Tables II through XXVII for Machines A to Z, respectively.

In Table XXVIII a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. The inclusion of these comparisons is made possible by the fact that interested participants submit their Concora flat crush test results to The Institute of Paper Chemistry. This affords each participant the opportunity to review the level of agreement for his data with the levels shown for the other participants. Data sheets for supplying this information may be obtained from the Institute. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXVIII are (1) the Institute and mill Concora averages for each roll included in these comparisons, (2) the difference between the roll average based on Institute data and that based on mill data, (3) the Institute and mill averages based on all rolls included in the comparison, and (4) the difference between these over-all averages.

The Concora flat crush data shown in Table XXVIII are summarized in Part I of Table XXIX where for each machine the following information is given: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average differences – that is, the difference between the current machine average based on Institute data and that based on mill data, and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXIX the average differences given in Part I have been converted to per cent. Comparative data from the previous two reports are also included in Part II of Table XXIX.

TABLE XXVIII

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR APRIL AND MAY, 1964

Machine A

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
A-1	707	3-24-64	39.0	40.3	+1.3
A-2	708	4- 1-64	37.0	37.3	+0.3
A-3	709	4-10-64	37.8	39.1	+1.3
A-4	710	4-22-64	38.0	38.0	0.0
A-5	711	5-15-64	42.1	40.7	-1.4
Current Machine Av.			38.8	39.1	+0.3

Machine B

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
B-1	5656	3-27-64	35.6	36.4	+0.8
B-2	1238	4- 6-64	33.7	34.7	+1.0
B-3	2590	4-12-64	35.3	35.2	-0.1
B-4	3777	4-17-64	36.4	34.6	-1.8
B-5	5174	4-24-64	38.5	39.0	+0.5
Current Machine Av.			35.9	36.0	+0.1

Machine C

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
C-1	448	3- 4-64	37.6	41.3	+3.7
C-2	449	3-12-64	36.7	36.7	0.0
C-3	450	3-16-64	35.5	36.5	+1.0
C-4	451	3-25-64	34.4	34.3	-0.1
C-5	452	4-1- 64	36.8	37.7	+0.9
C-6	453	4-6- 64	34.0	35.9	+1.9
C-7	454	4-23-64	32.8	36.7	+3.9
C-8	455	4-27-64	34.0	35.5	+1.5
Current Machine Av.			35.2	36.8	+1.6

Machine D

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
D-1	1101	3-26-64	35.3	36.7	+1.4
D-2	1102	3-26-64	36.0	34.3	-1.7
D-3	1109	4- 2-64	36.8	35.2	-1.6
D-4	1110	4- 2-64	36.1	36.5	+0.4
D-5	1117	4-13-64	35.5	39.5	+4.0
D-6	1118	4-13-64	36.1	36.8	+0.7
D-7	1125	5- 4-64	34.0	30.4	-3.6
D-8	1126	5- 4-64	34.6	31.5	-3.1
D-9	1133	5-20-64	33.0	33.3	+0.3
D-10	1134	5-20-64	31.9	31.9	0.0
Current Machine Av.			34.9	34.6	-0.3

Machine F

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
F-1	558	1- 6-64	42.1	38.8	-3.3
F-2	559	1-10-64	38.5	37.2	-1.3
F-3	560	2- 8-64	41.2	41.5	+0.3
F-4	561	2-19-64	42.5	44.5	+2.0
F-5	562	3- 8-64	41.8	40.7	-1.1
F-6	563	3- 9-64	43.0	43.8	+0.8
F-7	564	3-10-64	43.0	43.0	0.0
F-8	565	3-22-64	44.5	42.8	-1.7
Current Machine Av.			42.1	41.5	-0.6

Machine G

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
G-1	46	3-10-64	34.8	30.4	-4.4
G-2	47	3-19-64	37.1	33.1	-4.0
G-3	48	3-19-64	36.5	36.0	-0.5
Current Machine Av.			36.1	33.2	-2.9

Machine I

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
I-1	1114	4- 8-64	35.0	36.1	+1.1
I-2	1115	4- 8-64	32.5	30.6	-1.9
I-3	1122	4-13-64	36.5	33.8	-2.7
I-4	1123	4-13-64	35.5	31.8	-3.7
I-5	1130	4-27-64	33.5	34.0	+0.5
I-6	1131	4-27-64	33.6	33.6	0.0
I-7	1138	5- 6-64	35.3	33.5	-1.8
I-8	1139	5- 6-64	37.0	33.0	-4.0
Current Machine Av.			34.9	33.3	-1.6

Machine J

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
J-1	--	4- 8-64	33.8	34.4	+0.6
J-2	--	4-10-64	37.6	35.0	-2.6
J-3	--	4-13-64	36.5	36.1	-0.4
J-4	--	4-14-64	37.8	38.4	+0.6
J-5	--	5-11-64	37.2	36.8	-0.4
J-6	--	5-12-64	38.2	36.4	-1.8
J-7	--	5-14-64	37.8	35.3	-2.5
J-8	--	5-15-64	36.8	36.0	-0.8
Current Machine Av.			37.0	36.0	-1.0

Machine K

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
K-1	264	3-14-64	33.2	38.3	+5.1
K-3	266	3-28-64	34.6	38.2	+3.6
K-4	267	4-11-64	37.9	40.8	+2.9
Current Machine Av.			35.2	39.1	+3.9

Note: Please see end of table for footnote.

TABLE XXVIII (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR APRIL AND MAY, 1964

Machine L

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
L-1	493	3-18-64	40.9	40.4	-0.5
L-2	721A	3-25-64	36.1	36.4	+0.3
L-3	721B	3-25-64	35.3	36.7	+1.4
L-4	37	4- 2-64	34.1	36.2	+2.1
L-5	158	4- 6-64	34.7	32.8	-1.9
L-6	403	4-14-64	36.5	35.2	-1.3
L-8	789	4-27-64	42.8	42.8	0.0
L-9	89	5- 4-64	37.4	38.9	+1.5
Current Machine Av.			37.2	37.4	+0.2

Machine M

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
M-1	108	3-23-64	32.5	33.1	+0.6
M-2	109	4- 6-64	31.4	30.8	-0.6
M-3	110	5-19-64	25.9	27.4	+1.5
M-4	111	4-20-64	34.1	33.6	-0.5
M-5	112	4-28-64	36.5	32.2	-4.3
M-6	113	5- 2-64	33.2	32.3	-0.9
M-7	114	5-15-64	34.2	33.5	-0.7
Current Machine Av.			32.6	31.8	-0.8

Machine N

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
N-1	10	4- 3-64	36.1	37.0	+0.9
N-2	11	4- 9-64	34.9	35.5	+0.6
N-3	12	4-15-64	36.5	33.7	-2.8
N-4	13	4-20-64	38.3	36.8	-1.5
N-5	14	4-28-64	34.6	37.7	+3.1
N-6	15	5-13-64	40.2	42.2	+2.0
N-7	16	5-17-64	37.1	35.8	-1.3
Current Machine Av.			36.8	37.0	+0.2

Machine O

O-1	7	4-14-64	31.9	32.4	+0.5
O-2	8	4-14-64	32.5	35.0	+2.5
O-3	9	4-14-64	34.4	34.9	+0.5
O-4	10	4-14-64	35.6	36.2	+0.6
O-5	11	4-21-64	34.3	33.6	-0.7
O-6	12	4-21-64	34.4	34.7	+0.3
O-7	13	4-21-64	35.2	36.7	+1.5
O-8	14	4-21-64	35.8	37.1	+1.3
Current Machine Av.			34.3	35.1	+0.8

Machine P

P-1	C-5	3-27-64	33.5	36.8	+3.3
P-2	C-6	3-29-64	31.4	33.4	+2.0
P-3	C-7	3-29-64	34.6	35.9	+1.3
P-4	D-8	4- 3-64	34.0	36.6	+2.6
Current Machine Av.			33.4	35.7	+2.3

Machine R

R-1	9	3- 6-64	33.7	37.9[b,b]	+4.2
R-2	10	3-19-64	32.6	41.3[b,b]	+8.7
R-3	11	3-21-64	37.0	41.7[b,b]	+4.7
R-4	12	3-26-64	30.5	37.5[b]	+7.0
R-5	13	4- 3-64	31.8	34.4[b]	+2.6
R-6	14	4-14-64	37.9	36.2	-1.7
R-7	15	4-21-64	36.2	36.4	+0.2
R-8	16	4-28-64	35.5	36.6	+1.1
Current Machine Av.			36.5	36.4	-0.1

Machine S

S-1	108	3-23-64	32.8	32.2	-0.6
S-2	109	4- 6-64	35.0	34.1	-0.9
S-3	110	4-14-64	33.5	33.7	+0.2
S-4	111	4-20-64	36.6	33.6	-3.0
S-5	112	4-28-64	34.6	31.8	-2.8
S-6	113	5- 3-64	31.7	32.9	+1.2
Current Machine Av.			34.0	33.0	-1.0

Machine T

T-1	1	3-20-64	30.6	31.4	+0.8
T-2	2	3-20-64	33.0	33.4	+0.4
T-3	3	3-21-64	33.2	33.8	+0.6
T-4	4	3-18-64	35.6	35.6	0.0
T-5	5	4- 1-64	34.6	33.4	-1.2
T-6	6	4-12-64	35.3	36.4	+1.1
Current Machine Av.			33.7	34.0	+0.3

Machine U

U-1	--	4-10-64	35.4	38.8	+3.4
U-2	--	4-12-64	34.9	35.6	+0.7
U-3	--	4-14-64	35.2	36.5	+1.3
U-4	--	4-18-64	37.0	36.0	-1.0
U-5	--	5-11-64	36.1	35.0	-1.1
U-6	--	5-12-64	37.6	37.6	0.0
U-7	--	5-13-64	34.3	35.2	+0.9
U-8	--	5-16-64	37.4	37.8	+0.4
Current Machine Av.			36.0	36.6	+0.6

Note: Please see end of table for footnote.

TABLE XXVIII (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR APRIL AND MAY, 1964

Machine V						Machine W						Machine X					
			Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.		
Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]
V-1	376	3-20-64	40.0	38.2	-1.8	W-1	584	3-23-64	35.3	35.6	+0.3	X-1	--	4- 7-64	35.9	38.4	+2.5
V-2	377	3-24-64	38.4	37.9	-0.5	W-2	585	4- 8-64	39.1	39.6	+0.5	X-2	--	4- 8-64	36.7	35.2	-1.5
V-3	378	4- 3-64	40.0	39.0	-1.0	W-4	587	4-14-64	37.7	40.4	+2.7	X-3	--	4-10-64	39.2	37.0	-2.2
V-4	379	4-10-64	42.2	43.7	+1.5	W-5	588	4-19-64	34.3	36.9	+2.6	X-4	--	4-14-64	37.0	38.5	+1.5
V-5	380	4-23-64	40.6	40.0	-0.6	W-6	589	4-28-64	36.7	37.2	+0.5	X-5	--	5-12-64	38.5	38.0	-0.5
V-6	381	4-30-64	38.3	38.3	0.0							X-6	--	5-13-64	39.0	36.1	-2.9
V-7	382	5- 6-64	37.1	37.7	+0.6							X-7	--	5-15-64	37.3	35.8	-1.5
V-8	383	5-15-64	40.1	37.8	-2.3							X-8	--	5-16-64	37.8	38.3	+0.5
Current Machine Av.			39.6	39.1	-0.5	Current Machine Av.			36.6	37.9	+1.3	Current Machine Av.			37.7	37.2	-0.5

Machine Z					
Z-1	7	4-22-64	32.4	33.4	+1.0
Z-2	8	4-27-64	32.4	34.3	+1.9
Current Machine Av.			32.4	33.8	+1.4

[a] This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

[b] Not conditioned; therefore, these averages are not included in calculation of current machine averages for Machine R.

TABLE XXIX

PART I: A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORA FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND THOSE BASED ON MILL DATA

Machine code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Number of rolls compared	5	5	8	10	0	8	3	0	8	8	3	8	7	7	8	4	0	3	6	6	8	8	5	8	0	2
Concora flat crush, p.s.i.																										
Current machine av. (Institute)[a]	38.8	35.9	35.2	34.9	--	42.1	36.1	--	34.9	37.0	35.2	37.2	32.6	36.8	34.3	33.4	--	36.5	34.0	33.7	36.0	39.6	36.6	37.7	--	32.4
Current machine av. (Mill)[a]	39.1	36.0	36.8	34.6	--	41.5	33.2	--	33.3	36.0	39.1	37.4	31.8	37.0	35.1	35.7	--	36.4	33.0	34.0	36.6	39.1	37.9	37.2	--	33.8
Average difference[b]	+0.3	+0.1	+1.6	-0.3	--	-0.6	-2.9	--	-1.6	-1.0	+3.9	+0.2	-0.8	+0.2	+0.8	+2.3	--	-0.1	-1.0	+0.3	+0.6	-0.5	+1.3	-0.5	--	+1.4
Maximum difference[c]	-1.4	-1.8	+3.9	+4.0	--	-3.3	-4.4	--	-4.0	-2.6	+5.1	+2.1	-4.3	+3.1	+2.5	+3.3	--	-1.7	-3.0	-1.2	+3.4	-2.3	+2.7	-2.9	--	+1.9

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PER CENT) BETWEEN THE CONCORA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

Average difference, %[d]																										
Current report (April – May)	+0.8	+0.3	+4.5	-0.9	--	-1.4	-8.0	--	-4.6	-2.7	+11.1	+0.5	-2.5	+0.5	+2.3	+6.9	--	-0.3	-2.9	+0.9	+1.7	-1.3	+3.6	-1.3	--	+4.3
106th Report (Feb. – March)	0.0	-3.2	+7.8	+0.6	-3.8	-1.9	-7.6	-3.2	-6.2	+3.7	+8.0	+2.5	+3.4	-1.9	-2.8	+3.2	--	+11.7	+2.8	--	+0.8	+1.0	+1.6	+5.4	--	--
105th Report (Dec. – Jan.)	-3.6	+7.6	-2.3	+5.2	--	-2.0	-7.7	--	-6.5	+4.0	+5.6	-0.5	+5.7	+5.8	+6.2	+4.6	--	+11.6	+5.2	--	+1.9	+0.5	+1.6	-1.0	--	--

[a] Comparisons based on current machine average include only those rolls for which mill data were submitted.

[b] Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference. See Table XXVIII.

[c] Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXVIII.

[d] Average difference (per cent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

In Table XXX a summary of the agreement between Institute and mill Concora flat crush data is given for the current period, and comparative data from the previous bimonthly period are also included. The data shown for the current period indicate that agreement between Institute and mill Concora data was good. For example, it may be seen in Table XXX that, for the current period, 31.8% of the comparisons of Institute and mill data differed by 1% or less, 59.1% of the comparisons differed by 2.5% or less, and 86.4% of the comparisons differed by 5% or less. It may be further noted that agreement for the current period at the 1, 2.5, and 5% levels was somewhat better than the agreement obtained during the previous period at these levels. The maximum difference of 11.1% noted for the current period was somewhat lower than the maximum difference of 11.7% noted for the previous period.

TABLE XXX

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results[a]	Percentage of All Machines Included Within the Indicated Range	
	Previous Period[b]	Current Period[c]
± 1.0	18.2	31.8
± 2.5	36.4	59.1
± 5.0	72.7	86.4
± 10.0	95.5	95.5[d]
± 11.7	100.0	100.0[d]

[a] The average obtained at the Institute was used as the reference in the calculation of the percentage differences.

[b] February and March, 1964.

[c] April and May, 1964.

[d] Maximum percentage difference was 11.1.

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